

REMARKS

Claims 2-19, 21-38 and 40-57 are pending in this application, with claims 1, 20 and 39 having previously been canceled, without prejudice or disclaimer. By this Amendment, claims 4 and 23 have been amended to clarify the claimed subject matter. Support for the claim amendments can be found in the application as originally filed at, for example, page 2, lines 10-13, and in Fig. 14 (and corresponding discussion in the specification). Accordingly, claims 2-19, 21-38 and 40-57 are presented for continued examination, with claims 4 and 23 being in independent form.

Claims 2-19, 21-38, and 40-57 were rejected under 35 U.S.C. §101, as purportedly directed to non-statutory subject matter.

By this Amendment, claims 4 and 23 have been amended to clarify the claimed subject matter, and more specifically, that the subject of the claims is embodied in a copying machine and/or a printer. Applicant submits that such subject matter constitute patentable subject matter and are clearly not directed to manipulating abstract ideas.

Withdrawal of the rejection under 35 U.S.C. §101 is respectfully requested.

Claims were rejected under 35 U.S.C. § 102(e) as purportedly anticipated by U.S. Patent No. 6,510,254 to Nakami et al.

Applicant has carefully considered the Office Action and the cited art, and respectfully submits that independent claims 4 and 23, as amended, are patentable over the cited art, for at least the following reasons.

The present application relates to improved approaches for image processing when image size is changed. It is well known in the art that image processing can require large amounts of

time and computing resources. In the context of image size change, when resources are not properly managed, the process can take an inordinate amount of time and/or image quality can be compromised. The image size change may be, for example, a magnification or reduction of the image in order to be output on a different paper size in a printer or copying machine. Depending on the particular size change, additional processing may be necessary.

Applicant devised improved approaches for image size-change processing which make better use of time and resources. In particular, in the case that multiple processing ways are used, a sharing ratio in the processing between first and second processing ways is calculated and then adjusted so that the entire process of a predetermined image size-change processing is completed within a given time duration. The combination of processing ways is applied according to the sharing ratio, if a processing time for performing the entire processing of the image size-change processing utilizing the first processing way but not the second processing way exceeds the given time duration. Control of image size-change processing utilizing such a sharing ratio allows image quality to be maintained as much as possible and the image size-change processing to be performed within the given time duration.

In addition, applicant found that such advantages can be obtained when the adjustment of the sharing ratio is made in such a manner that the sharing ratio is gradually changed, the required time duration is calculated every time of the gradual changing of the sharing ratio, the thus-calculated required time duration is compared with the given time duration, and then, the sharing ratio at which the comparison result indicates that the required time duration corresponds to the given time duration is obtained. Each of independent claims 4 and 23 of the present application addresses these features, as well as additional features.

Nakami, as understood by applicant, proposes an approach for image data interpolation such that the number of constituent picture elements thereof is increased. The system proposed by Nakami selectively executes one of a plurality of interpolating processes according to an interpolating scale factor (which specifies an amount of interpolation required) and a balance between desired image quality and processing speed.

Nakami, Fig. 33, steps ST706-ST720, and column 24, lines 32-52 are cited in the Office Action as purportedly proposing calculating a sharing ratio.

Nakami, Fig. 33 is reproduced below:

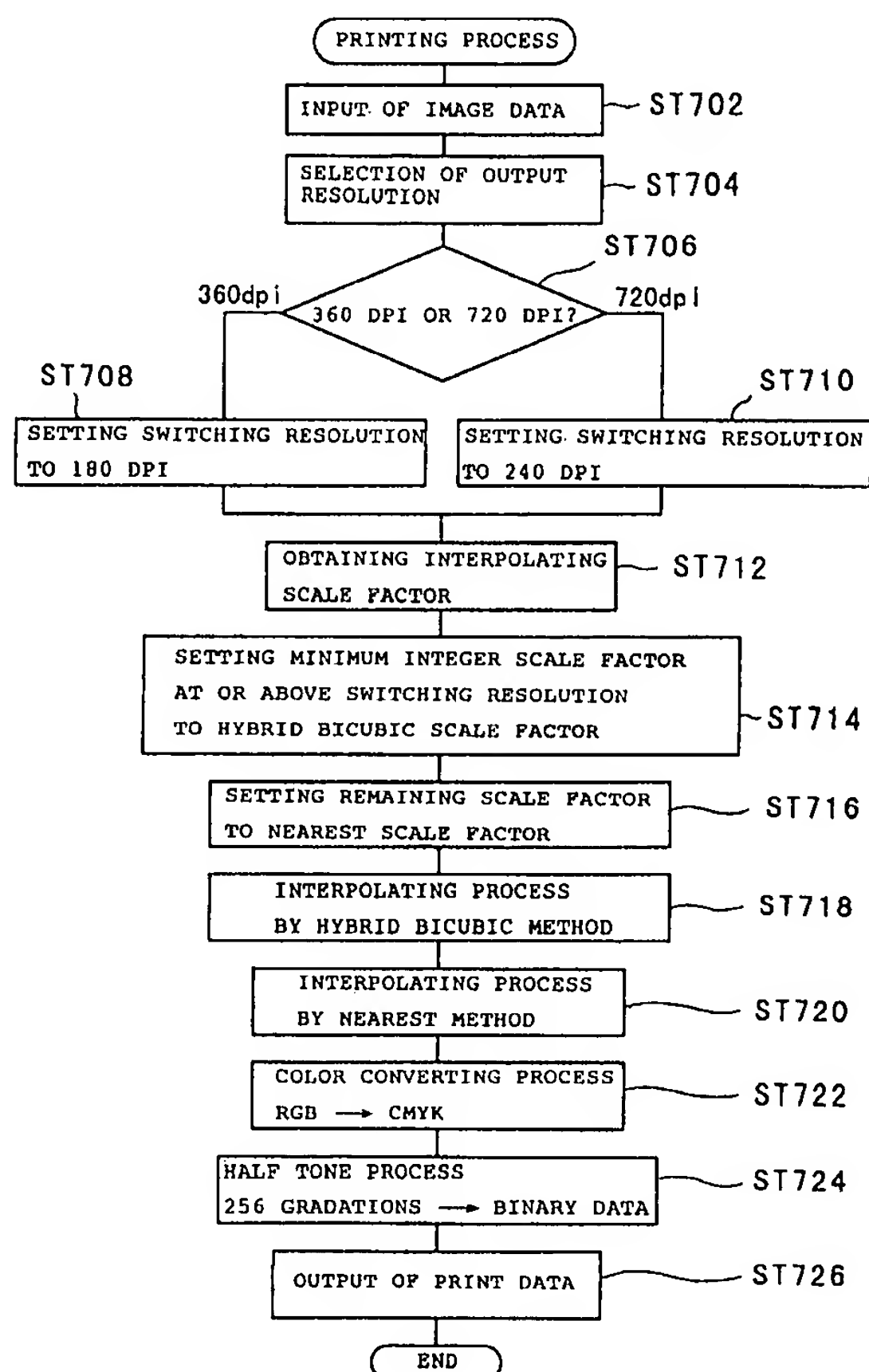


FIG. 33

Nakami, column 24, lines 32-52, states as follows:

At a step ST706, the processing is diverted on the basis of the selected resolution. Switching resolutions are set at steps ST708 and ST710 respectively. The flow of the picture element interpolating process will be described before description of the switching resolutions. The switching resolution is set to 180 dpi at the step ST708, whereas the switching resolution is set to 240 dpi at the step ST710. An interpolating scale factor is obtained at a step ST712, and an interpolating scale factor for the first stage of the interpolation is obtained from the relation between the interpolating scale factor and each switching resolution. The obtained interpolating scale factor is set as a hybrid bicubic scale factor at a step ST714. Successively, a remaining interpolating scale factor is obtained and is set as a nearest scale factor at a step ST716. Thereafter, the interpolating processes are carried out with both interpolating scale factors at steps ST718 and ST720 respectively. These interpolating processes are carried out by different manners respectively. The former is the interpolating process by the high-precision computation, whereas the latter is the interpolating process by the low-precision computation.

The Office Action, to the extent understood, equates the interpolating scale factor with a sharing ratio.

However, Nakami fails to disclose or suggest that the adjustment of the sharing ratio is made in such a manner that the sharing ratio is gradually changed, the required time duration is calculated every time of the gradual changing of the sharing ratio, the thus-calculated required time duration is compared with the given time duration, and then, the sharing ratio at which the comparison result indicates that the required time duration corresponds to the given time duration is obtained, as provided by the subject matter of claim 4 of the present application. The cited art simply does not teach or suggest the claimed subject matter.

Independent claim 23 is patentably distinct from the cited art for at least similar reasons.

Accordingly, for at least the above-stated reasons, Applicant respectfully submits that independent claims 4 and 23, and the claims depending therefrom, are patentable over the cited art.

In view of the amendments to the claims and remarks hereinabove, Applicant submits that the application is now in condition for allowance. Accordingly, Applicant earnestly solicits the allowance of the application.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition. The Office is hereby authorized to charge any fees that may be required in connection with this response and to credit any overpayment to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Paul Teng", is written over a horizontal line.

Paul Teng, Reg. No. 40,837
Attorney for Applicant
Cooper & Dunham LLP
Tel.: (212) 278-0400